

Moving to the new US NOx and SO₂ markets

Daniel Chartier and **Melanie LaCount** contend that as the US moves to the new Clean Air Interstate Rule, 'cap and trade' will once again deliver the desired results by building on the success of current programmes



nce considered a 'grand experiment', the use of cap-and-trade programmes today is readily embraced as an efficient and effective means to reduce air pollution.

First applied on a large scale to sulphur dioxide (SO₂) emissions in the US under the 1990 Clean Air Act Amendments, cap-and-trade programmes managed by the US Environmental Protection Agency (EPA) have since expanded to include the NOx Budget Trading Program.

From an environmental standpoint, results from these two US programmes have been outstanding. SO₂ emissions have dropped by more than 7 million tons below 1980 levels (a 41% reduction) and the greatest SO₂ reductions have occurred in areas of highest emissions. In the NOx Budget Trading Program region, emissions were 57% lower in 2005 than in 2000.¹

These emission reduction benefits have occurred while electrical generation increased significantly and have coincided with substantial costs savings. A 2005 study reported in the *Journal of Environmental Management* noted that the benefits of the Acid Rain Program in 2010 would be \$122 billion annually (in 2000 dollars), against costs of around \$3 billion (for both SO₂ and the more traditional NOX programmes).²

These tremendous benefits do not mean that there have not been obstacles along the way. For example, lack of familiarity with pricing fundamentals and uncertainty from legal challenges led to temporary price spikes in the early days of the NOx markets. However, because only low volumes of allowances were transacted during those spikes, the impact on the overall market was insignificant. In fact, most NOx trading by volume has occurred when prices have not been volatile and when well below EPA projections (this has also generally been the case in the SO₂ market). NOx prices "self-corrected" as more information

became available on the cost of controls and as the legal challenges were settled.

Compliance with the programmes has been nearly 100%, with minor cases of non-compliance mostly due to corporate accounting errors, where a small number of firms inadvertently held fewer allowances than needed at compliance deadlines. In spite of this, because the cap-and-trade schemes were

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designed with automatic penalty provisions, including the requirement to surrender future allowances to offset any excess emissions, their environmental integrity has never been compromised.

Today's markets are increasingly sophisticated. Moving past the early days of market formation where participants relied on spot, forward or swap transactions, market participants today enjoy an active options market, several alternatives for exchange-traded futures products, and a growing market for financial settlement. Adding to the maturity of the markets has been the entrance of banks, hedge funds and insurance companies, each adding liquidity to help increase market efficiency.

With the success of these programmes serving as the backdrop, the NOx and SO₂ markets are getting ready for the implementation of the new mandates of the Clean Air Interstate Rule (CAIR). CAIR requires further reductions in NOx and SO₂ in 29 eastern jurisdictions to facilitate attainment of the National Ambient Air Quality Standards for fine particulates and ozone.

Under CAIR, the existing Acid Rain Program continues, with the overlay of a new CAIR SO₂ obligation that requires 2010–14 vintage allowances to be surrendered at a 2:1 ratio, and vintage 2015 and later allowances to be surrendered at a 2.85:1 ratio. The CAIR

NOx programme creates a new annual programme to help implement the fine particulate standard, and tightens the requirements for the seasonal NOx programme for ozone control (see *Environmental Finance*, April 2005, pages 16–18).

Modelling by the EPA during the rule development suggests that pre-2010 vintage SO₂ allowances would be worth approximately \$736 per allowance in 2010 (in 2007 dollars), and that 2010–14 vintage allowances would be worth approximately \$368 per allowance due to the 2:1 retirement ratio. Today, with 2007 vintage allowances trading at approximately \$415 per ton (as of early April 2007), observers generally agree that the SO₂ market is undervalued. But with allowance demand low as utilities finalise compliance plans, there is little current support for higher prices.

The EPA's modelling of the NOx market projects prices in the annual market to be \$1,440 a ton in 2010. While there will be two distinct markets, the EPA expects that the prices in both the annual and seasonal markets will be established by the cost of controls for annual compliance.

There has been trading activity in the 2009 seasonal market, but allowances for the new annual NOx CAIR market have yet to trade. Observers expect that trading will not occur until state implementation plans for CAIR have been approved and NOx allowance accounts are populated.

For both the SO₂ and NOx markets, it will take time for buyers and sellers to fully understand the fundamentals of the changes introduced by CAIR. But as the CAIR markets continue to develop, they do so with the advantage of the 14 years of maturity, experience and sophistication gained since the first SO₂ trades were announced in 1993.

Most importantly, as CAIR-related trading activity evolves, cap and trade will ensure the environmental results will be achieved – and that is the true measure of success.

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¹ For a complete discussion of the environmental gains see the annual progress reports for the Acid Rain and NOx Budget Programs at www.epa.gov/airmarkets/ progress.

² Chestnut, L G; Mills, D M, 'A Fresh Look at the Benefits and Costs of the US Acid Rain Program', *Journal of Environmental Management*, 2005, Vol 77, Issue 3, pp 252–256.